

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference SH/PH/8416INT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/IB 2003/001974	International filing date (day/month/year) 25-04-2003	Priority date (day/month/year) 03-10-2002
International Patent Classification (IPC) or national classification and IPC G06T3/00, H04M1/247		
Applicant NOKIA CORPORATION ET AL		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>12</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>	
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>	

Date of submission of the demand 26-04-2004	Date of completion of this report 27-01-2005
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/IB 2003/001974

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 5 - 10 as originally filed/furnished
- pages* 1 - 4a received by this Authority on 08-12-2004
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 11 - 17 received by this Authority on 08-12-2004
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages 1 - 4 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☒ the claims, Nos. 40 - 43
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 40 - 43

because:

☐ the said international application, or the said claims Nos. _____
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____
are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 40 - 43

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the
Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with
the technical requirements provided for in the Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims

1 - 39

YES

Claims

NO

Inventive step (IS)

Claims

1 - 39

YES

Claims

NO

Industrial applicability (IA)

Claims

1 - 39

YES

Claims

NO

2. Citations and explanations (Rule 70.7)

The invention is intended to provide a mobile device with a display wherein the manner in which information is presented can be varied.

Reference is made to the following documents:

D1: US 2002033836 A1

D2: EP 1191768 A2

D3: GB 2358515 A

D4: WO 0186920 A2

D5: EP 1052598 A2

Document D1 (page 1, column 1, line 1 - page 2, column 2, line 6, figures 1 - 4, abstract) discloses a handheld computer or communications device (10) having a display (12) and a soft key (20) associated with the display (12). The display (12) displays information content with a first orientation and the soft key (20) appears as an icon or other graphic depiction (control content) on the display (12). A processor (see claim 1), for controlling the display (12), is arranged to vary the first orientation of the information content to a second orientation and maintain the icon or other graphic depiction (control content) on the soft key (20) in response to an activated key (user input device). According to page 2, column 1, lines 15 - 28, claims 12 - 13 and figures 3 - 4, the second orientation uses less than the entire viewing area to display the second orientation, i.e. the size of the image can be changed.

Document D2 (column 2, line 9 - column 8, line 14, figures 1 - 4; abstract) discloses a telecommunication terminal (1) having a display (3) for displaying information content, an input key

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

and a control unit (4) for controlling the display (3), arranged to vary a first orientation of the information content to a second orientation in steps of 90° (column 2, lines 55 - 58).

Document D3 (page 3, line 1 - page 16, line 28, figures 1 - 4C, abstract) discloses a mobile telephone (101) having a compass (109) that controls a microprocessor (105) to rotate the image of a map on a screen (102). The map is obtained from the network.

Document D4 (page 5, line 15 - page 11, line 27, figures 1 - 6, abstract) discloses a portable hand-held device (cellular telephone 1) having a processor (602), a display control unit (603) and a display (204, 304, 304A, 404, 502, 604). A user input device (device movement measuring means) controls a zoom function to increase/decrease the size of the viewed text or increase/decrease the magnification of a picture image.

Document D5 (column 1, line 5 - column 32, line 58, figures 1 - 20, abstract) discloses a mobile telephone having an input unit (401) and a display (413) for displaying information content received from a server. The size of the image on the display can be changed.

The device and the method of claims 1 and 13 differ from what is known from document D1, the closest prior art, in that the location of the input key does not vary when the orientation of the information content is varied. The device and the method of claims 1 and 13 are therefore novel (Article 33(2) PCT).

The problem to be solved by the present invention may therefore be regarded as how to improve the device and the method.

The solution to this problem proposed in claims 1 and 13 is considered to involve an inventive step (Article 33(3) PCT) since none of the cited documents suggest this feature.

Claims 2 - 12, 14 - 15 and 38 are dependent on claims 1 or 13 and as such also meet the requirements of the PCT with respect to novelty and inventive step. Claims 1 - 15 and 38 also meet the requirement of industrial applicability.

.../...

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

The invention claimed in independent claims 16, 24, 25 and 34 differs from what is known from document D1, the closest prior art, in that, among other things, the size of the display area is changed incrementally in response to successive inputs from the user input device.

The problem to be solved by the present invention may therefore be regarded as how to improve the device and the method.

The solution to this problem proposed in claims 16, 24, 25 and 34 is considered to involve an inventive step (Article 33(3) PCT) since none of the cited documents suggest this feature.

Claims 17 - 23, 26 - 33, 35 - 37 and 39 are dependent on claims 16, 24, 25 or 34 and as such also meet the requirements of the PCT with respect to novelty and inventive step. Claims 16 - 37 and 39 also meet the requirement of industrial applicability.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The expression "the control content" in claims 32, 33 and 37 is not defined in claims 32, 33, 37 or in any of the claims referred to.

TITLE

A mobile device for displaying information content.

FIELD OF THE INVENTION

- 5 Embodiments of the invention relate to a mobile device for displaying information content.

BACKGROUND TO THE INVENTION

- 10 Current mobile devices display information content in a manner determined at manufacture. Some mobile devices have two physically distinct configurations where the whole of the display is used in 'portrait' for one configuration and the whole of the display is used in 'landscape' in the other configuration. A dedicated hardware switch detects when the user converts the device between
15 configurations by, for example, opening or folding the device.

It would be desirable to allow the manner in which information is presented by the mobile device to be varied as and when is suitable. In particular, it would be desirable to allow a user flexibility in controlling the variation.

20

BRIEF DESCRIPTION OF THE INVENTION

- According to a first embodiment there is provided a mobile device for displaying information content, comprising: at least one input key associated with a display;
25 a display for displaying information content with a first orientation and control content, adjacent an input key, indicating its function; and a processor, for controlling the display, arranged to vary the first orientation of the information content to a second orientation and maintain control content adjacent the input key, wherein the location of the input key does not vary when the orientation of
30 the information content is varied.

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According to the first embodiment there is provided a method of controlling the display of a mobile device comprising the steps of: displaying information content with a first orientation and control content adjacent an input key, indicating the key's function; and changing the first orientation to a second orientation while maintaining control content adjacent the input key, wherein the location of the input key does not vary when the orientation of the information content is changed.

10 The orientation of the information content independently of the control content allows information to be presented the correct way up without changing the orientation of the mobile device and without affecting the functionality of the device.

15 When the information content orientation is changed, the control content associated with a first input key may be swapped with the control content associated with a second input key. When the information content orientation is changed, the orientation of the control content may be changed.

20 According to a second embodiment there is provided a mobile device for displaying information content, comprising: a display, having a variable display area, for displaying within the variable display area information content; a user input device; and a processor, for controlling the display, arranged to incrementally change the size of the display area while displaying the information content, in response to successive inputs from the user input device.

25

According to the second embodiment there is provided a method of controlling the display of a mobile device comprising the steps of: displaying information content within a first display area; and incrementally changing the size of the first display area while displaying the information content, in response to successive inputs from a user.

30

The resizing of the display area for the information content may enable the creation of information content in the mobile device that can be viewed correctly on another device and may enable the correct presentation of information content in the mobile device that was created on another device. This is particularly
5 useful when the information content is a picture made up of a collection of spaced alphanumeric characters and the similarity of the collection of alphanumeric characters to the picture depends upon the display area in which the alphanumeric characters are framed.

- 10 According to a third embodiment there is provided a mobile device for displaying information content, comprising: a display for displaying information content in a display area of a user-determined size and orientation; a user input device; and a processor, for controlling the display, operable to vary the user-determined orientation and/or to incrementally change the size of the display area while
15 displaying the information content, in response to successive inputs from the user input device.

According to the third embodiment there is provided a method of controlling the display of a mobile device comprising the steps of: displaying information content
20 within a first display area with a first orientation; incrementally changing the size of the first display area while displaying the information content, in response to successive inputs from a user; and changing the orientation of the information content to a second orientation.

25 The ability to be able to both re-size what is displayed and to change its orientation, enables a user to share information content received from another device with a person standing next to them in the form created by the originator and without having to rotate the mobile device.

30 The software control of the orientation of the information content may be incorporated within the game-play of a game played by a user on the mobile

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device. It may also enable the handedness of the mobile device to be changed, so that it can be switched from right-handed use to left-handed use.

5 The term information content includes map images, photographic images, alphanumeric text messages and images from games.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention reference will now be made by way of example only to the accompanying drawings in which:

10

Fig. 1 schematically illustrates a hand-held mobile device 10 for displaying information to a user.

Fig. 2 illustrates one possible user interface for the mobile device 10

15 Figs 3A, 3B and 3C illustrate the successive rotation of the information content without rotation of control content;

Figs 4A, 4B, 4C and 4D illustrate the successive rotation of the information content with rotation of control content;

Figs 5A, 5B, 5C and 5D illustrate the successive rotation of the information content with rotation and interchange of control content; and

20 Figs 6A, 6B, 6C illustrate the successive reduction in size of a display area with each actuation of the user input device.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

25 Fig. 1 schematically illustrates a hand-held mobile device 10 for displaying information to a user. The mobile device 10 may be a personal digital assistant, a mobile telephone or the like. The mobile device 10 illustrated in this example is a mobile telephone.

30 The mobile device 10 comprises: a processor 12; a memory 14; a display 20; a first input key 30 and a second input key 31; a user input device 40; and a radio frequency transceiver 50.

4a

The processor 12 receives input from the first input key 30, the second input key 31, the user input device 40 and the radio frequency transceiver 50. The processor 12 provides outputs to the display 20 and the radio frequency transceiver 50. The processor 12 can also read from and write to the memory 14.

5

The operation of the mobile device 10 is controlled by software computer program instructions loaded into the processor 12 from the memory 14.

CLAIMS

1. A mobile device for displaying information content, comprising:
at least one input key associated with a display;
5 a display for displaying information content with a first orientation and control
content, adjacent an input key, indicating its function; and
a processor, for controlling the display, arranged to vary the first orientation of the
information content to a second orientation and maintain control content adjacent
the input key, wherein the location of the input key does not vary when the
10 orientation of the information content is varied.
2. A mobile device as claimed in claim 1, further comprising a user input
device, wherein the processor is operable to vary the user-determined orientation
of the information content and maintain control content adjacent the input key, in
15 response to input from the user input device.
3. A mobile device as claimed in claim 2, wherein the functionality of the user
input device is controlled by the processor.
- 20 4. A mobile device as claimed in claim 1, 2 or 3, wherein the processor is
arranged to vary the user determined orientation of the information content
between four predetermined orientations.
5. A mobile device as claimed in any preceding claim, wherein the processor is
25 arranged to vary the user determined orientation of the information content by
successive increments of 90 degrees rotation about a first origin in the display.
6. A mobile device as claimed in any preceding claim, wherein the processor, is
operable to vary the user-determined orientation of the information content while
30 it is displayed.

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7. A mobile device as claimed in any preceding claim wherein the control content for the input key varies as the function of the input key is varied by the processor.

5 8. A mobile device as claimed in any preceding claim wherein the processor, when varying the orientation of the information content maintains the same control content adjacent the input key.

9. A mobile device as claimed in any preceding claim wherein the control
10 content has a fixed orientation with respect to the mobile device.

10. A mobile device as claimed in any one of claims 1 to 8, wherein the processor is operable to rotate the information content about a first origin and simultaneously rotate the control content about a second different origin, by
15 ninety degrees.

11. A mobile device as claimed in claim 10, wherein the processor is operable to simultaneously rotate the information content and the control content, in response to input from the user input device.

20

12. A mobile device as claimed in claim 10 or 11, wherein the first origin and the second origin are fixed.

13. A method of controlling the display of a mobile device comprising the steps
25 of:

displaying information content with a first orientation and control content adjacent an input key, indicating the key's function; and
changing the first orientation to a second orientation while maintaining the control content adjacent the input key, wherein the location of the input key does not vary
30 when the orientation of the information content is changed.

13

14. A method as claimed in claim 13, wherein the step of changing the first orientation is performed in response to user input while displaying the information content.

5 15. A method as claimed in claim 13 or 14, further comprising the step of changing the control content and/or its orientation when changing the orientation of the information content.

10 16. A mobile device for displaying information content, comprising: a display, having a variable display area, for displaying within the variable display area information content;
a user input device; and
a processor, for controlling the display, arranged to incrementally change the size of the display area while displaying the information content, in response to
15 successive inputs from the user input device.

17. A mobile device as claimed in claim 16, wherein the processor in response to input from the user input changes the display area size from a first one of a predetermined plurality of display area sizes to a second one of the
20 predetermined plurality of display area sizes.

18. A mobile device as claimed in claim 16 or 17, wherein the processor in response to input from the user input varies the display area while displaying the information content.

25

19. A mobile device as claimed in any one of claims 16 to 18, comprising a radio frequency transceiver, wherein the information content originates in another device and is received by the radio frequency transceiver from the another device.

30

20. A mobile device as claimed in any one of claims 16 to 18, wherein the information content originates in the device.

21. A mobile device as claimed in any one of claims 16 to 20, wherein the information content is alphanumeric text data.
- 5 22. A mobile device as claimed in claim 21, wherein the processor, provides a text message handling application in which the display area for the text message is variable in response to input from the user input device.
- 10 23. A mobile device as claimed in any one of claims 16 to 22, wherein the user input device is a rotatable dial.
24. A method of controlling the display of a mobile device comprising the steps of:
displaying information content within a first display area; and
15 incrementally changing the size of the first display area while displaying the information content, in response to successive inputs from a user.
- 20 25. A mobile device for displaying information content, comprising:
a display for displaying information content in a display area of a user-determined size and orientation;
a user input device; and
a processor, for controlling the display, operable to vary the user-determined orientation and to incrementally change the size of the display area while
displaying the information content, in response to successive inputs from the user
25 input device.
- 30 26. A mobile device as claimed in claim 25, further comprising at least one input key associated with a display; wherein the display is operable to display control content, adjacent the input key, indicating its function and wherein the control content remains adjacent the input key when the display area is resized.

15

27. A mobile device as claimed in claim 25 or 26, wherein the display information has a predetermined and fixed orientation with respect to the display area so that a variation in the display area produces a concomitant variation in the orientation of the information content.

5

28. A mobile device as claimed in any one of claims 25, 26 or 27, wherein the processor in response to first input from the user input device changes the display area size from a first one of a predetermined plurality of display area sizes to a second one of the predetermined plurality of display area sizes.

10

29. A mobile device as claimed in any one of claims 25 to 28, wherein the processor in response to second input from the user input devices changes the orientation of the display area from a first one of a predetermined plurality of orientations to a second one of the predetermined plurality of orientations.

15

30. A mobile device as claimed in claim 29, wherein the processor is arranged to vary the user determined orientation of the display area by successive increments of 90 degrees rotation about a first origin in the display.

20

31. A mobile device as claimed in any one of claims 25 to 31, wherein the processor, arranged to vary the user-determined size and orientation of the display area while the information content is displayed therein.

25

32. A mobile device as claimed in any one of claims 25 to 33, wherein the display has a plurality of edges and the control content is fixedly positioned at one edge of the display.

30

33. A mobile device as claimed in any one of claims 25 to 32, wherein the processor, is arranged to rotate the display area about a first axis and simultaneously rotate the control content about a second axis, by ninety degrees in response to second input from the user input device.

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34. A method of controlling the display of a mobile device comprising the steps of:

displaying information content within a first display area with a first orientation;
incrementally changing the size of the first display area while displaying the
5 information content, in response to successive inputs from a user; and
changing the orientation of the information content to a second orientation.

35. A method as claimed in claim 34, further comprising the step of displaying
control content adjacent an input key, indicating the key's function wherein the
10 control content is maintained adjacent the input key.

36. A method as claimed in claim 34 or 35, wherein the steps of changing the
first orientation and changing the size of the first area are performed while
displaying the information content.

37. A method as claimed in claim 34, 35 or 36, further comprising the step of
changing the orientation of the control content when changing the orientation of
the information content.

38. A mobile device as claimed in claim 10, 11 or 12, wherein the control content
is positioned at the second origin.

39. A mobile device as claimed in any one of claims 16 to 23, wherein the
processor is arranged to incrementally change the display area without varying
25 the orientation of the information content.

40. A mobile device for displaying information content, comprising: a display for
displaying information content, including alphanumeric characters, over a plurality
of lines;

30 a user input device; and
a processor, for controlling the display, arranged to change the number of
alphanumeric characters in a line of the displayed information content, while

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displaying the whole of the information content, in response to input from the user input device.

41. A method of controlling a display of a mobile device comprising the steps of:
5 displaying information content, including alphanumeric characters, over a plurality of lines; and
changing, in response to input from a user, the number of alphanumeric characters in a line of the displayed information content, while displaying the whole of the information content.

10

42. A mobile device for displaying information content, comprising:
a display for displaying information content, including alphanumeric characters, over a plurality of lines of a user-determined size and orientation;
a user input device; and
15 a processor, for controlling the display, operable to vary the user-determined orientation of each line and to change the number of alphanumeric characters that are displayed in each line, in response to input from the user input device.

43. A method of controlling the display of a mobile device comprising the steps
20 of:
displaying the information content, including alphanumeric characters, over a plurality of lines;
changing the number of alphanumeric characters that are displayed in each of the lines, in response to input from a user; and
25 changing the orientation of the information content to a second orientation.

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